VOLUME III: CHAPTER 11

GASOLINE MARKETING (STAGE I AND STAGE II)

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1

INTRODUCTION

This chapter describes the procedures and recommended approaches for estimating emissions from gasoline tank trucks in transit and at retail gasoline marketing outlets. Section 2 of this chapter contains a general description of the gasoline distribution industry category and an overview of available control technologies. Section 3 provides an overview of available emission estimation methods. Section 4 presents the preferred method for estimating emissions, and Section 5 presents the alternative emission estimation techniques. Quality assurance issues and emission estimate quality indicators for the methods presented in this chapter are discussed in Section 6. Data coding procedures are discussed in Section 7. Section 8 contains references used for this chapter.

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SOURCE CATEGORY DESCRIPTION

2.1 CATEGORY DESCRIPTION

Motor gasoline is produced by domestic petroleum refineries or in some cases imported to the United States, and then transported through a distribution network to customers. The distribution network is a complex system that includes many wholesale and retail outlets. The network includes a variety of storage and transfer facilities. Gasoline may be transported by tanker ships and barges, through pipelines, or by rail tank cars or tank trucks. This chapter covers most of those sections of the distribution network where evaporative emissions are usually considered to be area sources. Stage I and Stage II emissions (occurring during the transfer of gasoline from tank trucks to storage tanks at service stations, and subsequent transfer to the vehicle gasoline tank, respectively) are covered, as well as emissions from delivery trucks in transit, gasoline station storage tanks, and spillage. Additional information about this category can be found in *AP-42* (Section 4.4) (EPA, 1995), and the *AIRS Area and Mobile Source Category Codes* (EPA, 1992a).

Figure 11.2-1 shows a typical path by which gasoline may be transported from producer to consumer. This path includes operations that are not addressed in this chapter. Marine vessel loading and unloading operations are covered in Chapter 12. Bulk terminals and gasoline bulk plants, which are intermediate distribution points between refineries and outlets, are usually inventoried as point sources. Loading and unloading of railroad tank cars and pipeline transmission losses could be significant area source categories in some areas, but have not been included in this chapter.

2.2 PROCESS DESCRIPTION AND EMISSION SOURCES

The area sources of evaporative VOC emissions from the distribution of gasoline that are covered in this chapter include the following:

- Trucks in transit: evaporation of gasoline vapor (1) from loaded tank trucks during transportation of gasoline from the bulk plant/terminal to the service station or other dispensing outlet, and (2) from empty tank trucks returning from service stations to bulk plant/terminals.

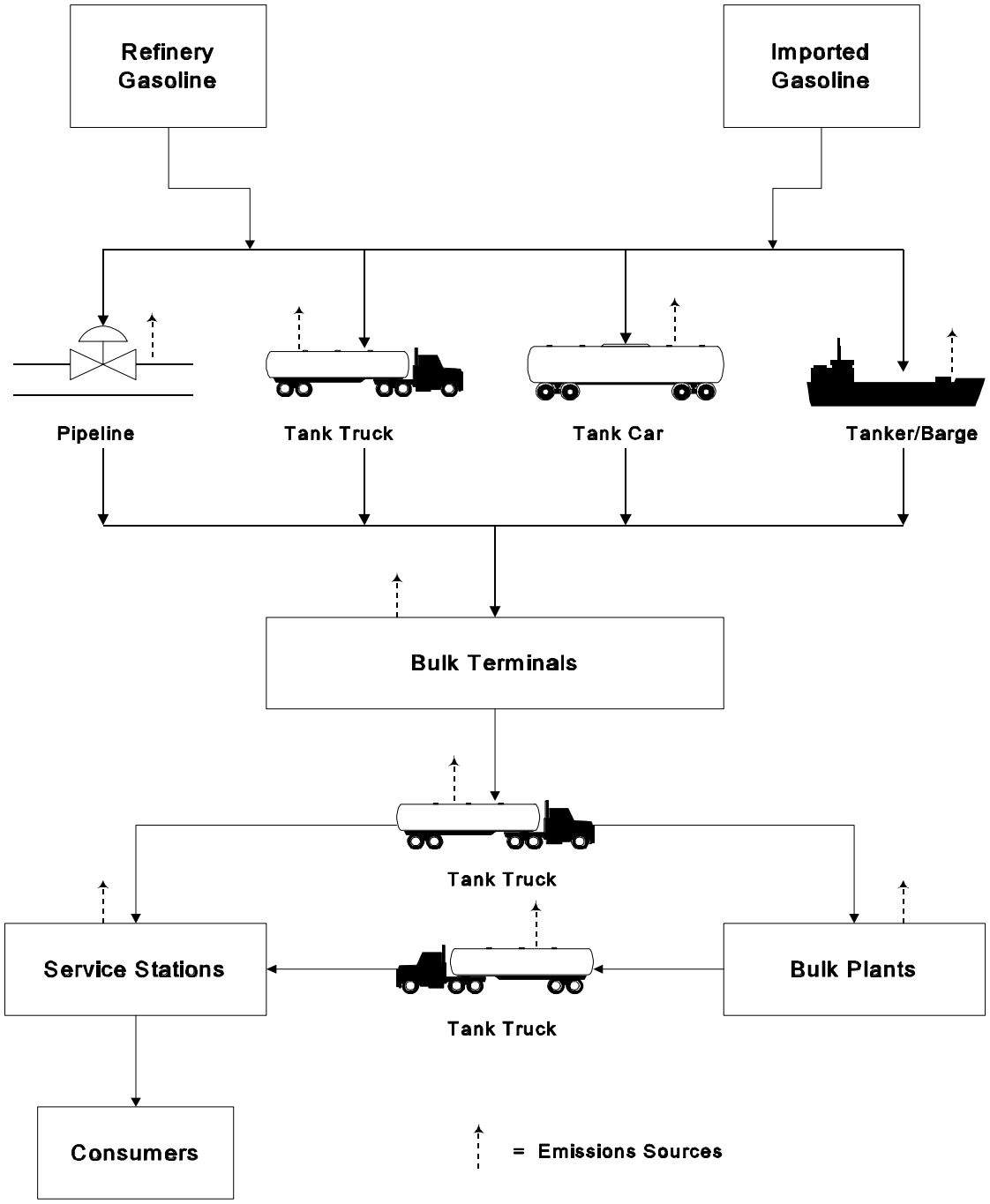

Figure 11.2-1
Gasoline Marketing Operations and Emission Sources

- Stage I: displacement of gasoline vapors from the storage tanks during the transfer of gasoline from tank trucks to storage tanks at the service station.

- Stage II: displacement of gasoline vapors from vehicle gasoline tanks during vehicle refueling. This category also may include spillage of gasoline (and subsequent evaporation) during either delivery activity above. This loss includes prefill and postfill nozzle drip and spitback and overflow from the filler pipe of the vehicle's fuel tank during filling.

- Storage tank working losses: evaporation of gasoline vapors from the storage tank and from the lines going to the pumps during transfer of gasoline.

Service stations (Standard Industrial Classification code 5541) traditionally have been the primary retail distributors for gasoline. Gasoline can be purchased from other types of businesses, such as auto repair garages, parking garages, and convenience stores. Gasoline may also be distributed to vehicles through various nonretail outlets, such as government motor pools and other vehicle fleet servicing operations. Gasoline is stored in underground and aboveground storage tanks at service stations and other dispensing facilities. Evaporative emissions occur during tank filling and vehicle refueling.

2.3 FACTORS INFLUENCING EMISSIONS

VOC emissions from gasoline marketing activities are influenced by several factors. Fuel volatility (measured as Reid vapor pressure, or RVP) affects the evaporation rate of gasoline. The technology for loading tank trucks and tanks (splash loading, submerged loading, vapor balance, etc.) affects the release of displacement emissions. Tank characteristics (color and design) affect working losses from aboveground storage tanks.

2.4 CONTROL TECHNIQUES

Emissions from underground tank filling operations at service stations (Stage I emissions) can be reduced by the use of a vapor balance system, which consists of a hose that returns gasoline vapors displaced from the underground tanks during filling back to the tank truck, as well as measures to ensure tightness of the truck. The control efficiency of the balance system can range from 93 to 100 percent (EPA, 1995). Emissions from vehicle refueling (Stage II emissions) also can be reduced by a vapor balance system. During refueling, the vapors displaced from the vehicle fuel tanks are returned to the underground tanks through the use of a special nozzle (EPA, 1995). Stage I controls have been implemented in some areas, both attainment and nonattainment. Stage II controls are currently not widely implemented, but are required in some ozone nonattainment areas as defined by the 1990 Clean Air Act (CAA) (EPA, 1991).

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3

OVERVIEW OF AVAILABLE METHODS

3.1 EMISSION ESTIMATION METHODOLOGIES

The following activities of the gasoline distribution industry are generally area sources of air pollution: (1) gasoline trucks in transit; (2) fuel delivery to outlets (Stage I); (3) vehicle refueling (Stage II); and (4) storage tank breathing. The emissions estimation methodologies for the subcategories of gasoline distribution identified in Section 2 have a common, simple form:

$$\text{Emissions} = \text{Emission Factor} \times \text{Activity Level} \qquad (11.3\text{-}1)$$

The methodologies for adjusting the emission factors and activity levels vary somewhat among the subcategories. Accordingly, methodologies for developing emission factors and activity levels are presented separately for each subcategory.

3.2 AVAILABLE METHODOLOGIES

Methods for estimating emissions from the gasoline marketing system generally involve employing an emission factor (provided by EPA or generated with EPA's MOBILE model) relating emissions to the volume of gasoline distributed. Gasoline distribution within the study area may be determined by area-specific tax records or survey data. Unfortunately, gasoline sales tax data are not always available at the county or city level, and performing a valid survey may not be feasible due to resource limitations. Alternately, state-level gasoline sales may be allocated to the study area based on economic data (dollars of total sales, available in U.S. Bureau of the Census publications).

Emission factors for gasoline trucks in transit, fuel delivery to outlets, and storage tank breathing are all provided by EPA. No methodologies have been identified to replace the use of these emission factors. Emission factors for vehicle refueling should be developed through the use of EPA's MOBILE model. This software uses local data (e.g., temperature, fuel volatility) to generate a custom VOC emission factor.

In selecting preferred methodologies identified for gasoline marketing subcategories, preference has been given to methodologies that maximize use of survey data or other data collected or reported at the county or city level.

3.1.1 EMISSION FACTORS

Gasoline Trucks in Transit

EPA has published emission factors for gasoline tank trucks in transit. The emission factors are included in Table 11.3-1.

TABLE 11.3-1

VOC EMISSION FACTORS FOR GASOLINE MARKETING ACTIVITIES[a]

Emission Source	mg/Liter Throughput	lb/1000 gal Throughput
Gasoline Tank Trucks in Transit		
Empty Tank Trucks[b]	6.5	0.055
Full Tank Trucks[c]	0.5	0.005
Filling Underground Tank (Stage I)		
Submerged Filling	880	7.3
Splash Filling	1,380	11.5
Balanced Submerged Filling	40	0.3
Underground Tank Breathing	120	1.0

[a] Source: *AP-42* Tables 5.2-5, 5.2-7.

[b] Midpoint of typical range provided in AP-42. Under extreme conditions, the upper end of the range is 0.37 lb/1000 gal (44.0 mg/L).

[c] Midpoint of typical range provided in AP-42. Under extreme conditions, the upper end of the range is 0.08 lb/1000 gal (9.0 mg/L).

Fuel Delivery to Outlets

EPA has published emission factors for filling underground storage tanks (Stage I). The emission factors are included in Table 11.3-1.

Vehicle Refueling

EPA recommends that the MOBILE model be used to generate refueling (Stage II) emission factors for highway vehicle emission inventories (EPA, 1992b). The model, designed to support the evaluation of air pollution from gasoline- and diesel-fueled vehicles, generates emission factors for tailpipe emissions and refueling activities. A detailed discussion of using this model is available from EPA (EPA, 1994).

The MOBILE model allows the user to select whether refueling emission factors are presented in grams per gallon (g/gal) of dispensed fuel or in grams per mile (g/mi). The preferred approach is to use the g/gal refueling emission factor that reflects any applicable Stage II controls, then multiply the emission factor by total gasoline sales (TGD). Using the g/gal emission factor will capture refueling emissions from gasoline purchased in the study area but consumed outside the study area. Conversely, the g/mi emission factor will assign to the study area emissions for vehicles refueled outside the study area but driven within the study area. It should be noted that MOBILE makes use of improved predictive equations to calculate refueling emission factors, including sensitivity to temperature and Reid vapor pressure (RVP), and these have not yet been incorporated into published *AP-42* factors for refueling. Additionally, the user may provide information on local Stage II emission controls to develop an emission factor for controlled emissions.

Refueling emissions have two mechanisms of introducing emissions to the environment: (1) vapor displacement from the vehicle fuel tank during refilling; and (2) gasoline spillage during refueling. The MOBILE user may request either a single emission factor that combines the two mechanisms or separate emission factors for displacement and spillage. Because both mechanisms should be taken into account when estimating refueling emissions, the preferred approach is to request the combined emission factor.

Storage Tank Breathing

EPA has published emission factors for storage tank breathing. The emission factors are included in Table 11.3-1.

3.1.2 ACTIVITY LEVELS

All of the preferred methodologies discussed in this document use total gasoline distribution as activity levels. The most useful source of existing data for estimating total gasoline distributed (TGD) in the inventory area is any existing collection of highway fuel sales data. The preferred approach to estimating TGD is to use these data. If available, these data should be collected, assessed, and processed to ensure that only highway vehicle gasoline dispensed in the area of concern is included in the total to be used as TGD. According to a recent EPA study, only 10 states actually collect and publish this type of data: Alabama, Arizona, Florida, Hawaii, Mississippi, Nevada, New Mexico,

New York, Washington and, Wyoming. Most of the states with significant nonattainment problems are absent from this list. In addition, the reliability of these statistics as measures of gasoline distributed at the county level is unknown; significant errors in allocation may occur if statistics are based on locations of distributors and not all of this fuel supply remains in the area of concern, or if substantial quantities of fuel come from distributors outside the area.

Where adequate data are not routinely collected, the only other alternatives for developing county-level data are (1) to collect sales tax data from the state taxing agency, if these data are available at sufficient disaggregation, or (2) to generate original data by collecting gasoline sales data from fuel distributors and retailers. State taxing agencies typically cannot provide the level of geographic detail necessary for inventory application; fuel taxes are usually collected from distributors rather than retailers, and these data are often considered proprietary information. Any tax-based estimates should be cross-checked with data from associations of service station owners, distributors, and other local sources. The large number of retailers and ongoing changes in retailer locations and ownership can make an original survey costly and difficult, although a small area might find this a reasonable approach. Scaling survey results to account for outlets not surveyed and/or nonresponders is also problematic; however, this could be accomplished using employment data for SIC Code 5541 or data on the total numbers of outlets in the area. One advantage of this approach is that information on the amount of gasoline distributed under different types of emission control scenarios can be directly estimated.

Another alternative for estimating gasoline consumption is to use data from various national publications. The Federal Highway Administration (FHWA) annually publishes *Highway Statistics*, which contains gasoline consumption data for each state.[1] Countywide estimates can be made by apportioning these statewide totals by the percentage of state gasoline station sales occurring within each county. Countywide service station gasoline sales data (dollars of sales, not gasoline volume) are available from the Bureau of the Census's *Census of Retail Trade*.[2] (Note: Data in the *Census of Retail Trade* are usually too old to use directly in estimating countywide sales; however, they are

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1 *Highway Statistics*. U.S. Department of Transportation. Federal Highway Administration, Washington, D.C. (Annual publication. Check USDOT/FHWA Web site for latest version,
internet address: http://www.fhwa.dot.gov).

2 *Census of Retail Trade: Geographic Area Series*. Bureau of the Census, U.S. Department of Commerce, Washington, D.C. (Available on hard copy by contracting the Census Bureau at
1-800-541-8345 or see the Census Bureau Web site, internet address:
http://www.census.gov. Alternatively, check http://sasquatch.kerr.orst.edu/econ-stateis.html).

useful in allocating other data to the county level.) Other apportioning variables, such as registered vehicles or vehicle miles traveled (VMT), can be used if the local agency feels that their use results in more accurate distributions of state totals to the county level. Even if the agency uses local sales data in the area source inventory, this approach should be used as a cross-check of the local consumption estimates. One distinct advantage of using data in *Highway Statistics* is that sales are tabulated by month which facilitates a seasonal adjustment of the gasoline station emission totals.

Another method of estimating gasoline sales is to use VMT data available from the ongoing transportation planning process. This alternative is not generally recommended for several reasons. First, it requires local information on both the percentage of VMT attributable to diesel versus gasoline fuel and the average miles-per-gallon fuel efficiency of the gasoline-powered motor fleet. None of these data may be available locally, and using nationwide averages may introduce errors in certain applications. Moreover, highway travel will not account for all gasoline sold at various off-highway applications. For these reasons, fuel sales is the preferred method for determining fuel use.

Note: Using state or local air pollution permit files for inventorying gasoline dispensing outlets is not likely to be an effective alternative. Permit information is not usually collected because of the large number of stations and because each station's emissions are much lower than traditional point source cutoff levels. Registration systems are being attempted in some states where major retail chains are required to compile and submit service station lists. Such a detailed approach is not usually warranted when gasoline distribution data will yield adequate emissions estimates.

Gasoline Trucks in Transit

The activity level for estimating emissions from gasoline trucks in transit is fuel transported through the study area. In order of preference, the available methods for estimating fuel throughput include: (1) obtaining (if available) existing gasoline sales data for the study area; and (2) apportioning state gasoline sales data to the study area level using surrogate allocation variables such as gasoline sales, vehicle registration, or economic activity data.

Gasoline distributed in an inventory area may be transported once (from bulk terminals outside the study area to retail outlets) or twice (distribution to gasoline bulk plants, then subsequent distribution to retail outlets). Recent industry trends favor more direct delivery to outlets, bypassing bulk plants.

The following equation can be used to develop an adjusted gasoline transportation activity factor for trucks in transit to account for gasoline transported twice within the inventory region:

$$GTA = \frac{TGD + TGT}{TGD} \qquad (11.3\text{-}2)$$

where:

GTA = Gasoline transportation adjustment factor
TGD = Total gasoline dispensed in the inventory region (1,000 gallons)
TGT = Amount of gasoline transported twice within the inventory region (1,000 gallons)

A default value of 1.25 for GTA can be used if the information needed to calculate GTA is not available. This default value is based on an estimated overall historical national ratio of bulk plant throughput to total gasoline consumption and should be used only as a last resort since it will not reflect temporal or regional variations from this national historical average.

Depending on the location of nearby gasoline terminals and routes used to deliver product to remote bulk plants or outlets, there may be some inventory areas with heavy tank truck traffic on local interstates consisting of gasoline being transported through the area but not loaded or unloaded locally. There are currently no adjustment factors for this specific type of activity. However, it may be possible to obtain data on this type of traffic from weigh stations on interstate highways and add this throughput to the estimate of TGD in the area to obtain an upper-limit estimate for total emissions for trucks in transit including transport through the area (assuming that the factors for full and empty trucks are appropriate in this case). Inventory preparers may want to make a gross estimate of the contribution to overall emissions that these trucks may make before investing significant resources in this effort. (Typical round-trip emissions for each truck are probably less than 1 pound of VOCs.)

Total gasoline tank truck emissions (TTE) in the inventory region can be estimated with the following equation:

$$TTE = \frac{(TGD \times LEF \times GTA) + (TGD \times UEF \times GTA)}{2000} \qquad (11.3\text{-}3)$$

where:

TTE = Total gasoline emissions from tank trucks in transit (tons)
LEF = Loaded tank truck in-transit emission factor from Table 11.3-1 (pounds per 1,000 gallons)
UEF = Unloaded tank truck in-transit emission factor from Table 11.3-1 (pounds per 1,000 gallons)

Fuel Delivery to Outlets

In order to use the emission factors for fuel delivery to outlets included in Table 11.3-1, it may be necessary to make estimates of the amounts of fuel delivered by each delivery technology (submerged filling, splash filling, balanced submerged filling). The first step is to determine what rules are in place

for Stage I tank filling. If a rule requires a certain type of control or filling method, then the inventory preparer need only determine a rule penetration factor. Otherwise, estimates of or surrogates for the volumes of fuel delivered via each filling method are required. Potential methodologies for making these estimates include:

Method 1 - Obtain estimates of gasoline delivery volumes: Obtain data on throughput of area gasoline outlets from state/local regulators or industry and trade groups (the national Petroleum Marketing Association, located in Arlington, Virginia, or state/local associations of gasoline dealers and repair shops). This is the preferred method.

Method 2 - Use estimated fractions of service stations using each filling method: Obtain the number of gasoline outlets that use each of the three types of tank filling methods from state and local regulators or industry and trade groups. Distribute gasoline delivery volumes according to these results.

Method 3 - Survey of outlets by filling method: Perform a survey of all or a representative sample of gasoline dispensing outlets in the inventory region to determine the type of tank filling method. Distribute gasoline delivery volumes according to these results. A survey design must ensure that the sample selected is representative. It is likely that smaller stations may use different controls or filling methods than larger ones. A sample should be stratified to ensure that all types of outlets are included. The survey needs to collect gasoline throughput data and other data that may be used to scale survey results to study area totals. Potential surrogates may be number of employees, number of pumps, or storage tank capacities.

The activity levels for each of the three fuel delivery technologies is then calculated as follows:

$$A_i = F_i \times TGD \qquad (11.3\text{-}4)$$

where:

A_i	=	Adjusted activity rate for fill type I (1,000 gallons)
F_i	=	Fraction of area total for fill type I (based on either throughput or number of stations)
TGD	=	Total gasoline dispensed in the inventory region (1,000 gallons)
I	=	1-3 representing the three filling methods

Vehicle Refueling

The activity factor for vehicle refueling can be either the total amount of gasoline distributed in the area or vehicle miles of travel (VMT). The preferred approach is to use estimates of local gasoline sales if these data are available.

- Obtain information on the amount of gasoline dispensed in the inventory region (TGD) using the methods described previously in this section. Use the best locally available estimate of TGD as the activity factor for vehicle refueling.

- If no local sources of information are available for estimating TGD, the agency may wish to use VMT as an alternative. Estimates of VMT should be obtained from the local transportation or planning agency who is responsible for preparing the highway vehicle emissions inventory. The disadvantage of using VMT is that it is a measure of vehicle activity in the area not a measure of the fuel dispensed in the inventory area. VMT produced by vehicles simply passing through the area, that did not refuel in the inventory region would tend to overstate the vehicle refueling activity level.

Storage Tank Breathing

The activity level for estimating emissions from storage tank breathing is total gallons delivered (TGD) in the inventory area. The methodology for estimating TGD for vehicle refueling is also recommended for this subcategory.

3.1.3 SPECIAL EMISSION CALCULATION ISSUES

Estimation of month-specific emissions from gasoline distribution can be based on activity apportionment factors developed from monthly state fuel use statistics available in *Highway Statistics*. Projections for fuel use can also be based on historic fuel use and vehicle miles traveled data from *Highway Statistics*, historic records from the sources from which current year area fuel usage was obtained, and/or area-specific VMT from Highway Performance Monitoring System (HPMS) (from Federal Highway Administration, Washington, DC) or local transportation agencies.

3.1.4 METHODOLOGY SUMMARIES

The methodologies proposed in this document are summarized in Table 11.3-2 below. Preferred and alternate methodologies are presented for each of the subcategories.

3.3 DATA NEEDS

3.3.1 DATA ELEMENTS

The data elements needed to calculate emission estimates for the gasoline distribution system depend on the methodology used for data collection. Each methodology requires some measure of activity

(or surrogate for activity) and an emission factor. The data elements needed for each emission estimation technique are presented in Table 11.3-3.

TABLE 11.3-2
PREFERRED AND ALTERNATE METHODS FOR ESTIMATING EMISSIONS FROM GASOLINE DISTRIBUTION SUBCATEGORIES

Sub-category	Method	Description
Gasoline Trucks in Transit	Preferred Method - Use detail or survey data	*Emission Factors* - from Table 3-1. *Activity Level* - Obtain fuel sales from tax records or survey data. Develop adjustment factor based on survey or highway-weigh station data.
	Alternate Method 1 - Use combination of default and detailed data	*Emission Factor* - from Table 3-1. *Activity Level* - Same as preferred method, substituting default GTA.
	Alternate Method 2 - Use default GTA and allocated fuel sales data	*Emission Factor* - from Table 3-1. *Activity Level* - Same as preferred method, substituting default GTA, allocate state fuel sales to study area based on gasoline station sales.
Fuel Delivery to Outlets	Preferred Method - Use detail or survey data	*Emission Factor* - from Table 3-1. *Activity Level* - Obtain fuel sales from tax records or survey data. Use survey data to determine filling technologies.
	Alternate Method 1 - Use allocated fuel sales data, survey filling data	*Emission Factor* - from Table 3-1. *Activity Level* - Same as preferred method, using allocated fuel sales estimates instead of actual data. Use survey data to determine filling technologies' usage.
	Alternate Method 2 - Use allocated fuel sales data, local knowledge of filling technology	*Emission Factor* - from Table 3-1. *Activity Level* - Same as preferred method, using allocated fuel sales estimates instead of actual data. Use trade association or local knowledge to determine filling technologies' usage.
Vehicle Refuel-ing	Preferred Method - Use MOBILE emission factor and detail or survey data	*Emission Factor* - use MOBILE emission factor. *Activity Level* - Obtain fuel sales from tax records or survey data.
	Alternate Method 1 - Use MOBILE emission factor, allocated fuel sales	*Emission Factor* - use MOBILE emission factor. *Activity Level* - use allocated fuel sales estimates instead of actual data.
	Alternate Method 2 - Use MOBILE emission factor, vehicle miles traveled (VMT) data	*Emission Factor* - use MOBILE emission factor to get emission factor in dimensions grams per mile traveled. *Activity Level* - Get VMT data from highway planners.
Storage Tank Breath-ing	Preferred Method - Use EPA emission factor and detail or survey data	*Emission Factor* - see Table 3-1. *Activity Level* - Obtain fuel sales from tax records or survey data.
	Alternate Method 1 - Use EPA emission factor, allocated fuel sales	*Emission Factor* - see Table 3-1. *Activity Level* - Use allocated fuel sales estimates instead of actual data.

TABLE 11.3-3

DATA ELEMENTS NEEDED FOR EACH METHOD

Subcategory	Data Element	Preferred Method	Alternate Method 1	Alternate Method 2
Gasoline Trucks in Transit	County-level fuel sales tax/survey data	X	X	
	Highway/weigh-station data	X		
	State fuel sales			X
	Gasoline station sales			X
Fuel Delivery to Outlets	County-level fuel sales tax/survey data	X		
	Filling technology survey data	X	X	
	Filling technology summary from local/state regulators or trade groups			X
	State fuel sales		X	X
	Gasoline station sales		X	X
Vehicle Refueling	MOBILE model inputs (see Reference 8)	X	X	X
	County-level fuel sales tax/survey data	X		
	State fuel sales		X	
	Gasoline station sales		X	
	VMT data			X
Tank Breathing	County-level fuel sales Tax/survey data	X		
	State fuel sales		X	
	Gasoline station sales		X	

3.3.2 ADJUSTMENTS TO EMISSIONS ESTIMATES

Adjustments applied to annual emissions estimates include point source corrections, applications of controls, spatial allocation, and temporal resolution. The type of adjustment is dependent on the type of inventory required. The data needs for point source emission estimate adjustments are dependent in part on the methodology used. Data needs for the adjustments listed below are as follows:

- Point source corrections — point source emissions or point source employment for inventory area for the specific SIC
- Application of controls — control efficiency, rule effectiveness, rule penetration
- Spatial allocation — employment, population, facility location, zoning or business districts location
- Temporal resolution — seasonal throughput, operating days per week, operating hours per day

3.3.3 POINT SOURCE CORRECTIONS

If the preferred method is used to estimate area source emissions from this category, the point source correction is performed as part of the method itself. If Alternate Method 1 is used, the point source corrections can be performed by one of the following: (1) subtract point source emissions from calculated total emissions, or (2) subtract point source employment in the specific SIC from total employment in that SIC and calculate area source emissions using the remaining employment in the SIC. If Alternate Method 2 is used, the point source corrections are performed by subtracting point source emissions from calculated total emissions.

3.3.4 APPLICATION OF CONTROLS

Section 3.8 of *Procedures for the Preparation of Emission Inventories for Carbon Monoxide and Precursors of Ozone, Volume I,* (EPA, 1991) provides guidance for determining and applying rule effectiveness (RE) for a source category. In addition, the EPA document *Procedures for Estimating and Applying Rule Effectiveness in Post-1987 Base Year Emission Inventories for Ozone and Carbon Monoxide State Implementation Plans* (EPA, 1989) provides more detailed information on RE.

Controlled area source emissions may be calculated with either of the following equations:

$$CAE_A = (EF_A)(Q)[1 - (CE)(RP)(RE)] \quad (11.3\text{-}5)$$

or

$$CAE_A = (UAE_A)[1 - (CE)(RP)(RE)]$$

where:
- CAE_A = controlled area source emissions of pollutant A
- EF_A = emission factor for pollutant A
- Q = activity factor for category
- CE = control efficiency/100
- RP = rule penetration/100
- RE = rule effectiveness/100
- UAE_A = uncontrolled area source emissions of pollutant A

3.3.5 SPATIAL ALLOCATION

If the emissions estimates are developed using a per employee factor, the spatial allocation of emissions can be performed according to facility location (if known) as with the point source inventory, or with local employment data. The agency should be aware that since location of gasoline marketing does not necessarily mirror location of population within a county, using population to spatially allocate emissions might be misleading. The inventorying agency will need to evaluate options for allocating county emissions, such as zoning information, actual location data identified from surveys, industry publications, etc.

3.3.6 TEMPORAL RESOLUTION

Seasonal Apportioning

Because emissions from these subcategories are generally directly proportional to fuel sales and fuel sales have well-documented seasonal trends, annual gasoline distribution emissions should be apportioned monthly based on fuel sales data. Fuel sales tax revenues are usually available from state departments of revenue and should be used to allocate emissions.

Daily/Hourly Resolution

As with all issues, the inventory agency should use local data if available. If no data are available, inventory agencies may use the Table 11.3-4 as default values:

TABLE 11.3-4

DAILY AND HOURLY ALLOCATION OF GASOLINE DISTRIBUTION SYSTEM EMISSIONS

Subcategory	Daily Allocation (days per week)	Hourly Allocation (hours per day)
Trucks in Transit	6	24
Fuel Delivery to Outlets	6	24
Vehicle Refueling	7	24
Storage Tank Breathing	7	24

3.4 PROJECTING EMISSIONS

The type of surrogate used to project emissions is dependent on the methodology used to develop the initial emissions estimate. In "growing" the emissions estimate, the inventorying agency should use the same activity parameter as was used to develop the initial estimate. For example, if a per gallon factor was used to develop the initial estimate, growth in gasoline sales should be used to develop the projected emissions estimate.

The general equation for developing the projected emissions is:

$$EMIS_{PY} = ORATE_{BY,O} * EMF * [1 - (\frac{CE_{PY}}{100})(\frac{RP_{PY}}{100})(\frac{RE_{PY}}{100})] * GF \qquad (11.3\text{-}6)$$

where:

	$EMIS_{PY}$	=	projection year emissions: ozone season typical weekday (mass of pollutant/day)
	$ORATE_{BY,O}$	=	base year operating rate: ozone season daily activity level
	EMF	=	projection year precontrol emissions factor (mass of pollutant/activity level)
	CE_{PY}	=	projection year control efficiency (percent)

RP_{PY}	=	projection year rule penetration (percent)
RE_{PY}	=	projection year rule efficiency (percent)
GF	=	growth factor (dimensionless)

The precontrol emission factor (EMF) reflects the mass of VOC per activity level emitted before control.

4

PREFERRED METHODS FOR ESTIMATING EMISSIONS

The following procedures should be used for estimating emissions from the gasoline distribution subcategories. See Section 3 for additional guidance for the application of these methods.

4.1 GASOLINE TRUCKS IN TRANSIT

(1) Consult state gasoline sales tax records or data collected through a survey of fuel distributors and retailers to determine the gasoline consumption in the study area.

(2) Obtain highway weigh-station data to estimate the amount of fuel transported through the area. Calculate GTA, the factor accounting for twice-transported fuel:

$$GTA = \frac{TGD + TGT}{TGD} \qquad (11.4\text{-}1)$$

where:

GTA = Gasoline transportation adjustment factor
TGD = Total gasoline dispensed in the inventory region (1,000 gallons)
TGT = Amount of gasoline transported twice within the inventory region (1,000 gallons)

(3) Calculate emissions:

$$TTE = \frac{(TGD \times LEF \times GTA) + (TGD \times UEF \times GTA)}{2000} \qquad (11.4\text{-}2)$$

where:

TTE = Total gasoline emissions from tank trucks in transit (tons)
LEF = Loaded tank truck in-transit emission factor from Table 11.3-1 (pounds per 1,000 gallons)
UEF = Unloaded tank truck in-transit emission factor from Table 11.3-1 (pounds per 1,000 gallons)

4.2 FUEL DELIVERY TO OUTLETS

(1) Consult gasoline sales tax records or survey data to determine the gasoline consumption in the study area.

(2) Use survey data to determine penetration of each filling technology.

(3) Multiply total fuel sales in the study area by the fraction of stations using each filling technology to estimate the fuel dispensed by each technology.

(4) Use technology-specific emission factors to estimate emissions from submerged filling, splash filling, and vapor-balanced submerged filling activities.

(5) Sum emissions from each technology to estimate total emissions.

4.3 VEHICLE REFUELING

(1) Consult gasoline sales tax records or survey data to determine the total amount of gasoline dispensed in the study area.

(2) From the local control agency or survey data, determine the level of local Stage II refueling controls.

(3) Run the MOBILE model to determine the emission rate on a mass per volume throughput (grams per gallon, converted to pounds per gallon) basis. (In MOBILE5b, this is accomplished by setting HCFLAG = 3). Based on the results of step 2, determine whether Stage II refueling controls need to be considered. If local stage II controls are in place, enter the appropriate data in the MOBILE one-time data section per MOBILE model requirements (EPA, 1994). (In MOBILE5b, set RLFLAG = 1 if there are no local Stage II controls, or set RLFLAG = 2 to calculate an emission factor that includes local Stage II controls. Note that MOBILE5b will factor in the effects of the national on-board vapor recovery system requirements for either value of RLFLAG.)

(4) Multiply the emission factor (lb/gallon of fuel) times the estimated gasoline volume (gallons of gasoline) to estimate emissions from vehicle refueling.

4.4 STORAGE TANK BREATHING

(1) Consult gasoline sales tax records or survey data to determine the gasoline consumption in the study area.

(2) Multiply gasoline sales (gallons) times the emission factor to estimate emissions from storage tank breathing.

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5

ALTERNATIVE METHODS FOR ESTIMATING EMISSIONS

Frequently, local county-level sales tax data for gasoline sales or other local data needed to adjust these values are not available. Also, the collection of local gasoline sales data through surveys of distributors and retailers may be impractical or too expensive. Under these circumstances, use of one of the following alternative methods is appropriate.

5.1 ALTERNATIVE METHOD 1

5.1.1 GASOLINE TRUCKS IN TRANSIT

This method is the same as the preferred method, except that a default factor is used to estimate the adjustment factor for gasoline transported twice in the inventory area.

(1) Consult gasoline sales tax records or survey data to determine the gasoline consumption in the study area.

(2) Use 1.25, a national default rate, as GTA (gasoline transportation adjustment factor).

(3) Calculate emissions:

$$TTE = \frac{(TGD \times LEF \times GTA) + (TGD \times UEF \times GTA)}{2000} \qquad (11.5\text{-}1)$$

where:

TTE = Total gasoline emissions from tank trucks in transit (tons)
LEF = Loaded tank truck in-transit emission factor from Table 11.3-1 (pounds per 1,000 gallons)
UEF = Unloaded tank truck in-transit emission factor from Table 11.3-1 (pounds per 1,000 gallons)

5.1.2 FUEL DELIVERY TO OUTLETS

This method apportions state-level data to counties instead of using local sales tax or survey data.

(1) Assume that gasoline consumption is proportional to gasoline station sales, reported in the Bureau of the Census's *Census of Retail Trade*. Allocate state gasoline consumption data from *Highway Statistics* to the study area according to the dollar sales figures reported in the *Census of Retail Trade*.

(2) Use survey data to determine penetration of each filling technology.

(3) Multiply total fuel sales in the study area by the fraction of stations using each filling technology to estimate the fuel dispensed by each technology.

(4) Use technology-specific emission factors to estimate emissions from submerged filling, splash filling, and vapor-balanced submerged filling activities.

(5) Sum emissions from each technology to estimate total emissions.

5.1.3 VEHICLE REFUELING

(1) Allocate state gasoline consumption from *Highway Statistics* to the study area. Assume that gasoline consumption is proportional to gasoline station sales, reported in the Bureau of the Census's *Census of Retail Trade.*

(2) From the local control agency or survey data, determine the level of local Stage II refueling controls.

(3) Run the MOBILE model to determine the emission rate on a mass per volume throughput (grams per gallon, converted to pounds per gallon) basis. (In MOBILE5b, this is accomplished by setting HCFLAG = 3). Based on the results of Step 2, determine whether Stage II refueling controls need to be considered. If local Stage II controls are in place, enter the appropriate data in the MOBILE one-time data section per MOBILE model requirements (EPA, 1994). (In MOBILE5b, set RLFLAG = 1 if there are no local Stage II controls, or set RLFLAG = 2 to calculate an emission factor that includes local Stage II controls. Note that MOBILE5b will factor in the effects of the national on-board vapor recovery system requirements for either value of RLFLAG.)

(4) Multiply the emission factor (lb/gallon of fuel) times the estimated gasoline volume (gallons of gasoline) to estimate emissions from vehicle refueling.

5.1.4 STORAGE TANK BREATHING

(1) Allocate state gasoline consumption from *Highway Statistics* to the study area. Assume that gasoline consumption is proportional to gasoline station sales, reported in the Bureau of the Census's *Census of Retail Trade.*

(2) Multiply gasoline sales (gallons) times the Table 11.3-1 emission factor to estimate emissions from storage tank breathing.

5.2 ALTERNATIVE METHOD 2

5.2.1 GASOLINE TRUCKS IN TRANSIT

(1) Allocate state gasoline consumption from *Highway Statistics* to the study area. Assume that gasoline consumption is proportional to gasoline station sales, reported in the Bureau of the Census's *Census of Retail Trade.*

(2) Use 1.25, a national default rate, as GTA.

(3) Calculate emissions:

$$TTE = \frac{(TGD \times LEF \times GTA) + (TGD \times UEF \times GTA)}{2000} \qquad (11.5\text{-}2)$$

where:

TTE = Total gasoline emissions from tank trucks in transit (tons)
LEF = Loaded tank truck in-transit emission factor from Table 11.3-1 (pounds per 1,000 gallons)
UEF = Unloaded tank truck in-transit emission factor from Table 11.3-1 (pounds per 1,000 gallons)

5.2.2 FUEL DELIVERY TO OUTLETS

(1) Allocate state gasoline consumption from *Highway Statistics* to the study area. Assume that gasoline consumption is proportional to gasoline station sales, reported in the Bureau of the Census's *Census of Retail Trade.*

(2) Use advice of local trade groups, industry representatives, or regulators to determine penetration of each filling technology.

(3) Multiply total fuel sales in the study area by the fraction of stations using each filling technology to estimate the fuel dispensed by each technology.

(4) Use technology-specific emission factors to estimate emissions from submerged filling, splash filling, and vapor-balanced submerged filling activities.

(5) Sum emissions from each technology to estimate total emissions.

5.2.3 VEHICLE REFUELING

(1) Consult state or local transportation planners to obtain VMT data for the study area.

(2) From the local control agency or survey data, determine the level of local Stage II refueling controls.

(3) Run the MOBILE model to determine the emission rate on a mass per vehicle-mile (grams per vehicle mile traveled, converted to pounds per mile) basis. (In MOBILE5b, this is accomplished by setting HCFLAG = 2). Based on the results of Step 2, determine whether Stage II refueling controls need to be considered. If local Stage II controls are in place, enter the appropriate data in the MOBILE one-time data section per MOBILE model requirements (EPA, 1994). (In MOBILE5b, set RLFLAG = 1 if there are no local Stage II controls, or set RLFLAG = 2 to calculate an emission factor that includes local Stage II controls. Note that MOBILE5b will factor in the effects of the national on-board vapor recovery system requirements for either value of RLFLAG.)

(4) Multiply the emission factor times the VMT estimates to estimate emissions from vehicle refueling.

5.2.4 STORAGE TANK BREATHING

Only one alternate methodology is provided for this category.

6

QUALITY ASSURANCE/ QUALITY CONTROL

Data collection and handling for the gasoline marketing source category should be planned and documented in the Quality Assurance Plan. When using survey methods, the survey planning and data handling should also be documented. Refer to the discussion of survey planning and survey QA/QC in Chapter 1, *Introduction to Area Source Emission Inventory Development*, of this volume, and the QA volume (VI) of the Emission Inventory Improvement Program (EIIP) series. Potential pitfalls to avoid when developing emission estimates by using a survey for this category are data gaps due to survey nonreturns or unidentified operations, unanswered or misunderstood survey questions, inappropriate assumptions used to compensate for missing information or scaling up the survey sample, and errors in compiling the returned survey information. Potential errors that are common to many area source methods are calculation errors, which can include unit conversion errors and data transfer errors.

6.1 EMISSION ESTIMATE QUALITY INDICATORS

In this chapter, four subcategories of emission sources are discussed. Emission estimation for all of the subcategories requires the amount of gasoline sold in the inventory area as the activity level. The preferred methods call for detailed gasoline sales data that may not be available at the county or study area level. While using the most accurate fuel distribution data available is important, if the data are not immediately available, conducting a survey to determine actual gasoline distribution data is difficult, expensive, and time consuming. Allocating fuel distribution to the county level using gasoline station sales is estimated to require from 20 to 30 hours of technical effort, while performing a survey would probably take several months and possibly 1,000 to 2,000 hours of technical effort.

6.1.1 DATA ATTRIBUTE RATING SYSTEM (DARS) SCORES

The DARS scores for methods for tank trucks in transit are summarized in Tables 11.6-1 through 11.6-3; for fuel delivery to outlets, in Tables 11.6-4 through 11.6-6; for vehicle refueling, in Tables 11.6-7 through 11.6-9; and for storage tank breathing, in Tables 11.6-10 and 11.6-11. A range of scores is provided for activity attributes when the recommended method for activity data collection uses either local tax data or survey results scaled to the inventory area. The higher scores are assigned to the local tax data because local tax data

TABLE 11.6-1

PREFERRED METHOD DARS SCORES: TANK TRUCKS IN TRANSIT; LOCAL GASOLINE SALES, ADJUSTMENT FACTOR FROM HIGHWAY WEIGH-STATION DATA

Attribute	Scores		
	Factor	Activity	Emissions
Measurement	0.7	0.6 - 0.9	0.42 - 0.63
Source Specificity	0.6	0.4 - 0.5	0.24 - 0.30
Spatial Congruity	0.7	0.7 - 1	0.49 - 0.70
Temporal Congruity	0.5	0.7 - 0.8	0.35 - 0.40
Composite Scores	0.63	0.60 - 0.80	0.37 - 0.51

TABLE 11.6-2

ALTERNATIVE METHOD 1 DARS SCORES: TANK TRUCKS IN TRANSIT; LOCAL GASOLINE SALES, DEFAULT ADJUSTMENT FACTOR

Attribute	Scores		
	Factor	Activity	Emissions
Measurement	0.7	0.6 - 0.9	0.42 - 0.63
Source Specificity	0.6	0.7 - 0.9	0.42 - 0.54
Spatial Congruity	0.7	0.5 - 0.8	0.37 - 0.53
Temporal Congruity	0.5	0.5 - 0.6	0.26 - 0.30
Composite Scores	0.63	0.59 - 0.79	0.37 - 0.50

TABLE 11.6-3

ALTERNATIVE METHOD 2 DARS SCORES: TANK TRUCKS IN TRANSIT; SCALED STATE-LEVEL GASOLINE SALES, DEFAULT ADJUSTMENT FACTOR

Attribute	Scores		
	Factor	Activity	Emissions
Measurement	0.7	0.6	0.42
Source Specificity	0.6	0.7	0.42
Spatial Congruity	0.7	0.5	0.37
Temporal Congruity	0.5	0.5	0.26
Composite Scores	0.63	0.59	0.37

TABLE 11.6-4

PREFERRED METHOD DARS SCORES: FUEL DELIVERY TO OUTLETS; LOCAL GASOLINE SALES, FILLING METHOD FROM SURVEY

Attribute	Scores		
	Factor	Activity	Emissions
Measurement	0.7	0.4 - 0.5	0.29 - 0.38
Source Specificity	0.7	0.4 - 0.5	0.24 - 0.32
Spatial Congruity	0.7	0.7 - 1	0.49 - 0.70
Temporal Congruity	0.5	0.7 - 0.8	0.35 - 0.40
Composite Scores	0.65	0.54 - 0.70	0.34 - 0.45

TABLE 11.6-5

ALTERNATIVE METHOD 1 DARS SCORES: FUEL DELIVERY TO OUTLETS; SCALED STATE-LEVEL GASOLINE SALES, FILLING METHOD FROM SURVEY

Attribute	Scores		
	Factor	Activity	Emissions
Measurement	0.7	0.4	0.29
Source Specificity	0.7	0.4	0.24
Spatial Congruity	0.7	0.6	0.42
Temporal Congruity	0.5	0.7	0.35
Composite Scores	0.65	0.52	0.33

TABLE 11.6-6

ALTERNATIVE METHOD 2 DARS SCORES: FUEL DELIVERY TO OUTLETS; SCALED STATE-LEVEL GASOLINE SALES, FILLING METHOD FROM TRADE GROUPS

Attribute	Scores		
	Factor	Activity	Emissions
Measurement	0.7	0.4	0.29
Source Specificity	0.7	0.4	0.29
Spatial Congruity	0.7	0.6	0.42
Temporal Congruity	0.5	0.7	0.35
Composite Scores	0.65	0.54	0.34

TABLE 11.6-7

PREFERRED METHOD DARS SCORES: VEHICLE REFUELING; LOCAL GASOLINE SALES, FILLING METHOD FROM REGULATORS

Attribute	Scores		
	Factor	Activity	Emissions
Measurement	0.8	0.4 - 0.7	0.32 - 0.56
Source Specificity	0.8	0.6 - 0.8	0.48 - 0.64
Spatial Congruity	1	0.7 - 1	0.70 - 1.00
Temporal Congruity	0.9	0.7 - 0.8	0.63 - 0.72
Composite Scores	0.88	0.60 - 0.83	0.53 - 0.73

TABLE 11.6-8

ALTERNATIVE METHOD 1 DARS SCORES: VEHICLE REFUELING; SCALED STATE-LEVEL GASOLINE SALES, FILLING METHOD FROM SURVEY

Attribute	Scores		
	Factor	Activity	Emissions
Measurement	0.7	0.4	0.28
Source Specificity	0.8	0.6	0.48
Spatial Congruity	1	0.6	0.60
Temporal Congruity	0.9	0.7	0.63
Composite Scores	0.85	0.58	0.50

TABLE 11.6-9

ALTERNATIVE METHOD 2 DARS SCORES: VEHICLE REFUELING; GASOLINE USE FROM VMT, FILLING METHOD FROM SURVEY

Attribute	Scores		
	Factor	Activity	Emissions
Measurement	0.7	0.4	0.28
Source Specificity	0.8	0.4	0.32
Spatial Congruity	1	0.7	0.70
Temporal Congruity	0.9	0.7	0.63
Composite Scores	0.85	0.55	0.48

TABLE 11.6-10

PREFERRED METHOD DARS SCORES: STORAGE TANK BREATHING; LOCAL GASOLINE SALES

Attribute	Scores		
	Factor	Activity	Emissions
Measurement	0.7	0.6 - 0.9	0.42 - 0.63
Source Specificity	0.7	0.7 - 0.9	0.49 - 0.63
Spatial Congruity	0.7	0.7 - 1	0.49 - 0.70
Temporal Congruity	0.5	0.7 - 0.8	0.35 - 0.40
Composite Scores	0.65	0.68 - 0.90	0.44 - 0.59

TABLE 11.6-11

ALTERNATIVE METHOD 1 DARS SCORES: STORAGE TANK BREATHING; SCALED STATE-LEVEL GASOLINE SALES

Attribute	Scores		
	Factor	Activity	Emissions
Measurement	0.7	0.6	0.42
Source Specificity	0.7	0.7	0.49
Spatial Congruity	0.7	0.6	0.42
Temporal Congruity	0.5	0.7	0.35
Composite Scores	0.65	0.65	0.42

are the most direct measure of local data for the inventory period. Survey data require a scaling step, which introduces potential over- or underestimation. All scores assume that satisfactory QA/QC measures are performed and no significant deviations from good inventory practice have been made. If these assumptions are not met, new DARS scores should be developed according to the guidance provided in the QA volume.

All of the emission calculation methods for tank trucks in transit, fuel delivery to outlets, and storage tank breathing use emission factors from *AP-42*. Important points to consider when scoring the emission factor component of these methods are that the factors are based on studies published in 1982 and that local temperature variations and gasoline Reid vapor pressure (RVP) are not factored into the emission calculation. The age of the emission data means that any changes in gasoline formulation and improvements in vapor control technology since 1982 will not be reflected in the emission factors. DARS scoring for all of the *AP-42* emission factors are the same except for the tank trucks in-transit subcategory. The scores for emission factor source specificity for tank trucks in transit are lower than for other subcategories because the factors provided in this chapter are averages of ranges provided in *AP-42*.

The emission factor recommended for the vehicle refueling subcategory was developed using the MOBILE model, and is a factor that expresses refueling emissions as a function of fuel RVP, temperature of dispensed fuel, and the difference in the temperature between the dispensed fuel and the residual tank fuel. The effects of emission controls may also be included in this factor. These more locally specific and up-to-date emission factors are scored higher than the *AP-42* factors.

The most significant difference between the preferred and the first and second alternative methods for this source category is how the activity-level data are collected. The preferred methods for activity data collection use either local gasoline sales data collected by a state or local tax authority, or survey data obtained from gasoline retailers in the area. Using local gasoline sales tax data results in the highest DARS scores for activity attributes. The other preferred method for collecting activity data, a survey of gasoline retailers, will require a scaling step. That scaling step could introduce the same level of variability to the estimate that is introduced in Alternative Method 2, in which state-level gasoline sales are scaled down to the inventory area. DARS scores assigned to the survey approach and the scaled state-level data approach reflect this similarity.

A component of the DARS scoring for gasoline trucks in transit, fuel delivery to outlets, and vehicle refueling is the apportioning of the activity. For trucks in transit, the amount of gasoline sold in the area must be adjusted up to account for gasoline that is transported twice within the inventory area and gasoline that is transported through, but not delivered in, the area. The preferred approach for this adjustment, using weigh-station data, will not capture all of the activity. Activity scores for the preferred method are reduced because of this adjustment approach. The alternative approach is a national default factor, which reduces the spatial congruity score because it will not reflect variability at the local level. The activity temporal congruity score for tank trucks in transit is also lowered since the adjustment factor is based on a 1978 report on gasoline marketing (EPA, 1991) and does not reflect any recent changes in transport practices. Adjustments for fuel delivery to outlets and vehicle refueling activities must be made to define uncontrolled or controlled portions for the emission estimate. In each case, the apportioning procedure reduces the rating of activity measurement and source specificity from what they might have been if the activity level had been more directly measured and assumptions about the application of controls were more specific to gasoline sales. These adjustments may result in an over- or underestimation of emissions if the assumptions are not valid in the inventory area.

6.1.2 SOURCES OF UNCERTAINTY

Another way to assess the emission estimates is to examine the associated uncertainty. For activity estimates derived from survey data, the uncertainty can be quantified (see Chapter 4 of Volume VI of the EIIP series). Statistics needed to quantify the uncertainty for other methods of activity-level data collection are incomplete.

Sources of uncertainty in estimating emissions from gasoline marketing include the difficulty of collecting information for adjustment and apportioning factors, and the use of assumptions when using that information. Of particular concern is the assumption that activity data for fuel delivery to outlets can be apportioned to different types of controls by a count of gasoline stations with no consideration of the differences in throughput that may exist between a larger and possibly controlled station and a smaller uncontrolled station.

The emission factors provided in *AP-42* also carry a degree of uncertainty in that any single emission factor for gasoline marketing processes will not necessarily reflect the local gasoline formulation or temperatures, or the equipment and handling practices in the area for the inventory time period. The emission factors calculated by the MOBILE model should reduce the uncertainty for the vehicle refueling subcategory emission estimates.

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DATA CODING PROCEDURES

The codes in Table 11.7-1 are recommended for the gasoline distribution category. The codes that identify the type of control are preferred.

TABLE 11.7-1

SOURCE CODES FOR THE GASOLINE DISTRIBUTION CATEGORY (EPA, 1992a)

Category Description	Process Description	AMS Codes	Units
Petroleum Product Transit	Truck - Gasoline	25-01-030-120	1,000 Gallons
Petroleum Product	Underground Tank Filling-Submerged	25-01-060-051	1,000 Gallons
Storage - Gasoline Service Stations	Underground Tank Filling-Splash	25-01-060-052	1,000 Gallons
	Underground Tank Filling-Balanced Submerged	25-01-060-053	1,000 Gallons
	Vehicle Fueling-Uncontrolled Displacement Loss	25-01-060-101	1,000 Gallons
	Vehicle Fueling-Controlled Displacement Loss	25-01-060-102	1,000 Gallons
	Vehicle Fueling-Spillage	25-01-060-103	1,000 Gallons
	Underground Tank-Breathing and Emptying	25-01-060-201	1,000 Gallons
	Total All Processes	25-01-060-000	1,000 Gallons

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